

## **AMENDMENTS TO THE DRAWINGS**

Replacement sheet 1 including Figure 1 is submitted to replace the originally filed sheets 1 including Figure 1.

Attachments: Replacement sheet 1.

## **REMARKS**

### **SUMMARY**

Reconsideration of the application is respectfully requested.

Claims 1 and 6 have been amended to correct previously undetected informalities. A colon “:” has been added after the word “comprising.” The amendments have not been entered to overcome prior art and no new matter has been introduced.

Claims 24-25 have been added. No new matter has been introduced.

Claims 10-23 have been withdrawn.

Accordingly, Claims 1-9 and 24-25 remain pending.

### **Drawings**

Figure 1 has been replaced to correct a previously undetected informality by clarifying the structure to which item 106 indicates. Other than correcting this informality, no changes have been made to Figure 1.

Applicants respectfully note that the Office Action does not indicate whether the drawings are otherwise accepted or objected to by the Examiner and requests clarification as to the status of the drawings.

### **Restrictions**

Applicants confirm election of Claim Set I (Claims 1-9) for prosecution on the merits and Claims 10-23 are hereby withdrawn. Further, Applicants preserve the right to traverse the restriction at a later time and pursue the non-elected Claims 10-23 in a divisional application.

### **Claim Rejections Under 35 U.S.C. § 103(a)**

In “Claim Rejections – 35 USC § 103” the third paragraph on page 4 of the above-identified final Office Action, Claims 1-9 have been rejected as being obvious over U.S. Patent No. 6,77,807 to Sukharev *et al* (hereinafter “Sukharev”) in view of U.S. Patent No. 6,165,912 to McConnell *et al* (hereinafter “McConnell”) under 35 U.S.C. § 103(a).

As will be explained below, it is believed that the claims were patentable over the cited art in their original form and, therefore, the claims have not been amended to overcome the references.

Before discussing the prior art in detail, it is believed that a brief review of the invention, as claimed, would be helpful. Claim 1 calls for, *inter alia*, an operation of “providing a wafer comprising a plurality of **copper structures** partially encased in a **hydrophobic** interlayer dielectric layer” and depositing a cobalt cap on the exposed copper structures.

As such, Claim 1 recites a novel method of capping copper structures partially encased in a **hydrophobic** IDL.

As described in MPEP 2142, to establish a *prima facie* case of obviousness over the instant application, three basic criteria must be met by the proposed combinations. First, there must be some suggestion or motivation, either in Sukharev or in the other cited references or in the knowledge generally available to one of ordinary skill in the art, to modify or to combine the teachings of Sukharev and the other cited references. Second, there must be a reasonable expectation of success. Finally, Sukharev and the other cited references, when combined, must teach or suggest all the claim limitations of the instant application. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in Sukharev or the cited references, and not be based on applicant’s disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The Sukharev reference merely teaches that a copper layer maybe formed “over the top of dielectric structures 14.” (See col. 3, lines 59-65). However, Sukharev does not teach or suggest the necessary limitation of “providing a wafer comprising a plurality of **copper structures** partially encased in a **hydrophobic** interlayer dielectric layer” as recited in Claim 1 of the instant application.

The McConnell reference merely teaches, among other things, that more uniform deposition results and removing of unwanted particles can be achieved by introducing sonic energy during the contacting electronic components with a metal deposition solution. (See

col. 12, lines 5-15). However, as with Sukharev, McConnell does not teach or suggest the necessary limitation of “providing a wafer comprising a plurality of **copper structures** partially encased in a **hydrophobic** interlayer dielectric layer” as recited in Claim 1 of the instant application.

Therefore, for at least these reasons, Claim 1 is not obvious and is patentable over Sukharev and McConnell combined under 35 U.S.C. § 103(a)

Independent Claim 6 includes in substance the same recitation as described for Claim 1. Thus, for at least the above stated reasons, Claim 6 is not obvious and is patentable over the Office Action’s proposed combination of Sukharev and McConnell under 35 USC § 103(a).

Claims 2-5 and 7-9 each depend from independent Claims 1 or 6 incorporating their corresponding limitations. Thus, for at least the above stated reasons, Claims 2-5 and 7-9 are not obvious and are patentable over the Office Action’s proposed combination of Sukharev and McConnell under 35 USC § 103(a).

Further, as described in MPEP 2141, in determining the differences between the prior art and the claims, the question under 35 U.S.C. §103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious in view of Sukharev and the other cited references. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983). Additionally, prior art must be considered in its entirety, including disclosures that teach away from the claims.

Sukharev, having been filed in 2003 and therefore having full benefit of the teachings of McConnell, issued in 1999, actually teaches away from use of the sonic energy. In Sukharev, “the capping layer 20 is formed only over the copper layer 15, and not over any of the dielectric structures.” Therefore the need for removing unwanted particles from the capping layer formed by the electro-less process in Sukharev does not exist since the cobalt deposited forms “only over the copper layer” and not over any of the dielectric structures.

Thus, Sukharev teaches away from the Office Action's proposed combination with McConnell.

As stated above, Claims 7-9 each depend from independent Claim 6 incorporating its corresponding limitations. Thus, for at least the above additional stated reason, Claims 7-9 are not obvious and are patentable over Sukharev and McConnell combined under 35 U.S.C. § 103(a).

In the event the Examiner should still find any of the remaining claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out. In the alternative, the entry of the amendment is requested, as it is believed to place the application in better condition for appeal, without requiring extension of the field of search.

#### **New Claims 24 – 25**

New Claims 24 and 25 have been added to more fully claim embodiments of the the present invention, which are not found in the in the cited refereneces.

### CONCLUSION

In view of the foregoing, reconsideration and allowance of Claims 1-9 and 24-25 are solicited. As a result of the amendments made herein, Applicants submit that Claims 1-9 and 24-25 are in condition for allowance. Accordingly, a Notice of Allowance is respectfully requested. If the Examiner has any questions concerning the present paper, the Examiner is kindly requested to contact the undersigned at (206) 407-1504. If any fees are due in connection with filing this paper, the Commissioner is authorized to charge the Deposit Account of Schwabe, Williamson and Wyatt, P.C., No. 50-0393.

Respectfully submitted,  
SCHWABE, WILLIAMSON & WYATT, P.C.

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